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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/614,848

07/07/2003

Hiroyuki Hebiguchi

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04/15/2005

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EXAMINER

CHEN, WEN YING PATTY

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 04/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/614,848

Applicant(s)

HEBIGUCHI, HIROYUKI

Examiner

Wen-Ying P. Chen

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/01/05.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-8 and 10-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-8, and 10-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's amendment dated 3/01/2005 has been received and entered.

By this amendment, claims 1, 3-8, 10-14 are now pending in the present application.

Applicant's arguments with respect to claims 1 and 8 have been considered but are moot in view of the new ground(s) of rejection as follows:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5-8, and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki et al. (US 2001/0013912).

With respect to claims 1 and 8: Yamazaki et al. disclose in Figure 1 a liquid crystal display device with a liquid crystal layer (element 117) held between two substrates (elements 110 and 119), pixel electrodes (element 113), switching elements (element 111). Yamazaki et al. also disclose in Figure 2 a diffuse reflector (element 113) doubling as a display electrode (pixel electrode) and switching elements (element 343) connected to the diffuse reflector.

The diffuse reflector comprises a specular reflector (Paragraph 0048; since it is made of an aluminum film, it has electrical conductivity) and a light diffusion portion made of a

Art Unit: 2871

transparent dielectric (Fig. 2, element 341) arranged on the incident surface of the specular reflector. In Figure 2, Yamazaki et al. show that the light diffusion portion has an uneven configuration disposed on the surface in the side facing the liquid crystal arranged at a distance from each other (Paragraph 0049).

As to claim 5 and 12: Yamazaki et al. disclose that the thickness of the light diffusion portion, the vertical distance between the top of a convex portion and the bottom of a concave portion, is 0.3 μ m or less in a visible light region (Paragraph 0052) and hence it is less than 3 μ m as recited.

As to claims 6 and 13: Yamazaki et al. disclose that the dielectric film is made from polyimide film and an orientation or an alignment film (Paragraph 0057).

As to claims 7 and 14: Yamazaki et al. disclose that the diffusion reflector can be made from ITO (Paragraph 0056), which is a transparent conductive material and hence will be a transreflector.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

Art Unit: 2871

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 3-4 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al. (US 2001/0013912) in view of Tsuda et al. (US 6097458).

Yamazaki et al. disclose all of the limitations set forth in the previous claims. Yamazaki et al. further disclose that the refractive index of the polyimide dielectric layer is about 1.5 (Paragraph 0057). The refractive index and the dielectric constant of a material are related by the equation: dielectric constant = square root of index of refraction. Hence the recitations in claims 3-4 and 10-11 as they apply to dielectric constant and refractive index are interchangeable.

However, Yamazaki et al. do not disclose the refractive index or the dielectric constant of the liquid crystal material.

Tsuda discloses that the refractive index of the liquid crystal material is about 1.5 (Column 9, lines 48-50). Hence the refractive index of the dielectric material as disclosed by Yamazaki et al. and the refractive index of the liquid crystal material as disclosed by Tsuda is similar. Since the refractive indices of the materials match, light will pass through the liquid crystal material and the dielectric film without any boundary refractory effects resulting in a bright display. When the refractive index (dielectric constant) of the liquid crystal material changes when no voltage is applied, there will be a refractive index mismatch between the liquid crystal material and the dielectric film, causing a loss of light at the interface resulting in a poorer

Art Unit: 2871

display. Thus for bright displays, the refractive index and the dielectric constant of the two materials should be closer to each other.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adapt the liquid crystal material having a refractive index of 1.5 as taught by Tsuda to the display device of Yamazaki et al. in order to provide bright display of images as taught by Tsuda (Column 4, lines 32-42).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wen-Ying P. Chen whose telephone number is (571)272-8444.

The examiner can normally be reached on 8:00-5:00 M-F.


Art Unit: 2871

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wen-Ying P Chen
Examiner
Art Unit 2871

wpc



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